

# FACTORS THAT AFFECT PERFORMANCE MEASUREMENT SYSTEMS: A CRITICAL REVIEW

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## ABSTRACT

This paper aims to synthesize the research findings on the factors that are related to the uses of performance measures and to realize future research opportunities in this study area. The analysis is based on an in-depth review of several empirical studies published in high quality academic journals in accounting and management. This review paper considers articles published from January 1995 to December 2015. The findings of the paper show that many internal and external factors of an organization, such as size, organizational structure, environmental uncertainty, strategy, market competition, and many other contextual variables, influence the uses of performance measures. Some of these contextual factors are either controllable or not. Therefore, researchers and practitioners need to be conscious of these contingencies before using and analyzing the consequences of performance measures.

**Keywords:** performance measures, financial measures, nonfinancial measures, multiple measures, strategic performance measures

## INTRODUCTION

In recent years, performance measurement has received significant attention from academics and researchers (Brignall & Modell, 2000; Hussain & Hoque, 2002; Cavalluzzo & Ittner, 2004; Bourne, Neely, Mills, & Platts, 2003). Performance measurement is acknowledged as critical for efficient business management (Melnik, Bititci, Platts, Tobias & Andersen, 2013) and use

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of multiple performance measures has a beneficial effect on organizational performance (Davis & Albright, 2004; Hoque & James, 2000). However, many internal and external factors affect uses of performance measures. Therefore, comprehensive knowledge about the contextual factors that are related to the use of performance measures is important. This review paper is an attempt to extend the limited extant literature in this area.

This paper aims to summarize research findings on contextual factors associated with the use of performance measures. Many review articles have already published on contextual factors related to the use, implementation, and design of several management accounting practices. For example, Chanhall (2003) identified size, strategy structure, environment, and technology as determinants of designs in management control systems of organizations. Otley (2016) recently mentioned strategy, environmental uncertainty, and national culture as contextual factors related to the use and implementation of management accounting and control practices. However, no comprehensive literature review has been carried out on contextual factors that are solely associated with the use of performance measures. Therefore, this paper will fill that research gap. This paper also tries to address various future research avenues in this field of study. A systematic literature review (Tranfield, Denyer & Smart, 2003) is conducted to synthesize the scattered research findings on the contextual factors that affect the use of performance measures.

These findings revealed some unusual contextual factors that are not identified in previous review papers. For example, the nature of the use of performance measures (Henri, 2006), product lifecycle stage (Hoque, 2000) and human resource factors (Widener, 2006) influence the use of performance measures. Researchers and practitioners must consider these factors before adopting and using different performance measures in evaluating organizational performance.

The rest of this paper is organized into five sections. The second section discusses the definition and categories of performance measures. The third section presents the methodology for conducting the literature review. The fourth section is centered on the literature review findings. The final section presents future research avenues identified from the synthesis of previous literature, implications of the findings for academics and researchers, as well as limitations of this review paper.

## **DEFINITION AND CATEGORIES OF PERFORMANCE MEASURES**

Substantial management time and significant research effort by academics focuses on how to measure organizational performance (Kennerley & Neely, 2002). Neely, Gregory and Platts (1995) asserts that, “a performance measure can be defined as a metric used to quantify the efficiency and/or effectiveness of action”. However Melnyk, Stewart and Swink (2013) differ slightly with the definition of Neely, Gregory and Platts (1995); Melnyk, Stewart and Swink (2013) differentiate a performance measure with a metric, and they define performance measure as “an instrument used to quantify the efficiency and/or effectiveness of action”. Whereas in this review paper, performance measures are considered as “just indicators of performance and not real performance”. Organizational performance is traditionally measured using financial measures. Measuring organizational performance is desirable in financial terms as the strategy of most organizations aims at financial success. Financial measures are also objective, reliable, verifiable, and less costly to use (Tuomela, 2005). Regardless of their extensive use, financial performance measures are criticized as being excessively historical and backward-looking, narrow in focus, lack predictive capability to give details of future performance, reward temporary or incorrect behavior of managers and provides incomplete information (Kaplan & Norton, 1992, 1996; Chenhall, 1997; Perera, Harrison & Poole, 1997; Ittner, Larcker & Rajan, 1997; Ittner & Larcker, 1998; Otley, 1999; Banker, Potter & Srinivasan, 2000). However, many studies provide evidence that nonfinancial measures can be the leading indicators of financial performance (for example, Banker, Potter & Srinivasan, 2000; Ittner & Larcker, 1997), thereby leading to the development and popularity of nonfinancial performance. Recently, many firms adopt a diverse set of nonfinancial performance measures to supplement financial metrics that are deemed to provide good information on strategic progress and success (Ittner, Larcker & Randall, 2003).

In order to support this endeavor of many firms, numerous performance measurement models relying on a mix of financial and nonfinancial measure have been developed, such as the ‘balanced scorecard’ (BSC) (Kaplan & Norton, 1992), the ‘performance pyramid’ (Lynch & Cross, 1991) and the ‘results and determinants framework’ (Fitzgerald, Johnston, Brignall,

Silvestro & Voss,1991). Among these models, BSC (Kaplan & Norton, 1992, 1996) has been widely adopted and implemented as a superior combination of nonfinancial and financial measures of performance. The measures of BSC are based on four areas of business success, namely, financial performance, customer relations, internal business processes, as well as organizational learning and innovation activities. However, strategic performance measures are also gaining importance from many business organizations recently.

In this paper, we identify four types of performance measures to elucidate our findings and classify the reviewed articles (Table 1). We classified strategic performance measures (SPM) individually because organizations occasionally use financial or nonfinancial performance measures only as performance indicators without any explicit or implicit link with those strategy measures, whereas SPM must be explicitly or implicitly connected with strategy. Therefore, SPM is different from other measures and we classify these measures separately.

**Table 1: Types of Performance Measures**

Types	Examples
Financial measures (FM)	Return on investment, economic value added (Malmi & Brown, 2008)
Non-Financial measures (NFM) <sup>[1]</sup>	Customer relations, internal business processes, learning of organizations, and innovation activities (Kaplan & Norton, 1992)
Hybrid/Multiple measure (MM)	Combination of financial and nonfinancial measures of performance
Strategic Performance Measures (SPM)	Financial and nonfinancial performance measures that are explicitly or implicitly linked to strategy (Ittner, Larcker & Randall, 2003). For example, balanced scorecard (Kaplan & Norton,1996)

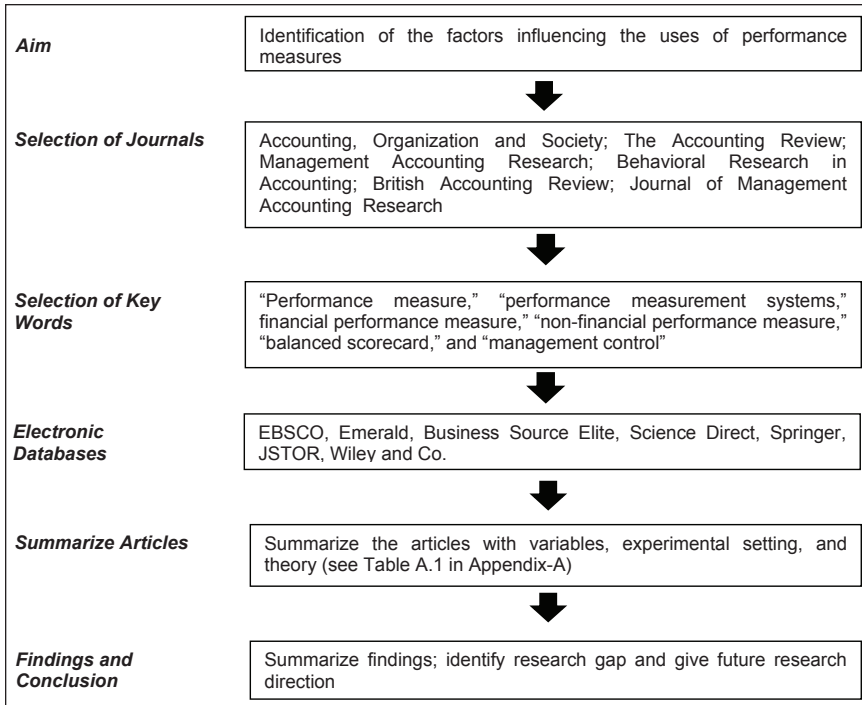
## **REVIEW METHODOLOGY**

### **Review Process**

The methodology for conducting the review is based on a synthesis of various broad and comprehensive literature reviews performed by Franco-Santos, Lucianetti and Bourne (2012);

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Hoque(2014); Atkinson, Balakrishnan, Booth, Cote, Groot, Malmi, Roberts, Uliana and Wu (1997) and Shields (1997). This paper follows a systematic literature review process (Tranfield, Denyer & Smart, 2003) to articulate the research findings. However, this paper reviewed the articles published from January 1995 to December 2015. The year 1995 was chosen as a cut-off point because of the introduction of balanced scorecard (BSC) in 1992. The use of nonfinancial and multidimensional performance measures were instigated after 1992 with the introduction of BSC. Figure 1 presents the review process used in this paper.



**Figure 1: Review Process**

We chose the preceding journals because based on our study of previous literature reviews (Franco-Santos, Lucianetti, & Bourne, 2012; Hoque, 2014), these journals are likely to publish research on the use of performance measures and are considered high quality journals. Few other accounting journals that published research papers on the use of performance measure exist. However, these journals mainly focus on how organizations have used performance measures instead of focusing on the factors that affect the use of performance measures. Therefore, these journals do not serve our research purposes and are excluded.

The keywords are also used in previous literature reviews to identify research papers on performance measures (Franco-Santos, Lucianetti, & Bourne, 2012; Hoque, 2014) and hence, used in this paper. Moreover, few studies came from cross-references. This criterion is applied to avoid missing relevant studies published in other journals, which were not included

in this review. The articles included in the review had to provide empirical evidence regardless of their qualitative or quantitative data. Only the sections of an article that met our research objectives were included in this review; whereas, the sections that did not meet the criteria were omitted. Articles that discussed the design, conceptual framework, or other issues that were irrelevant to our research objectives were excluded from the final sample of the papers.

## Conceptual Framework of the Study

After analyzing the sample papers, we constructed Table A.1 (Appendix-A) to organize our findings and to assist us in generating our conceptual framework (shown in Figure-1). In this framework, we have shown contextual factors as determinants of the use of performance measures. By using arrow sign, we have shown the relationship between the contextual factors and the use of performance measures. In summarizing the results of sample papers, we also include the theory and research setting in Table A.1 (Appendix-A) to identify all possible research gaps in this study area.

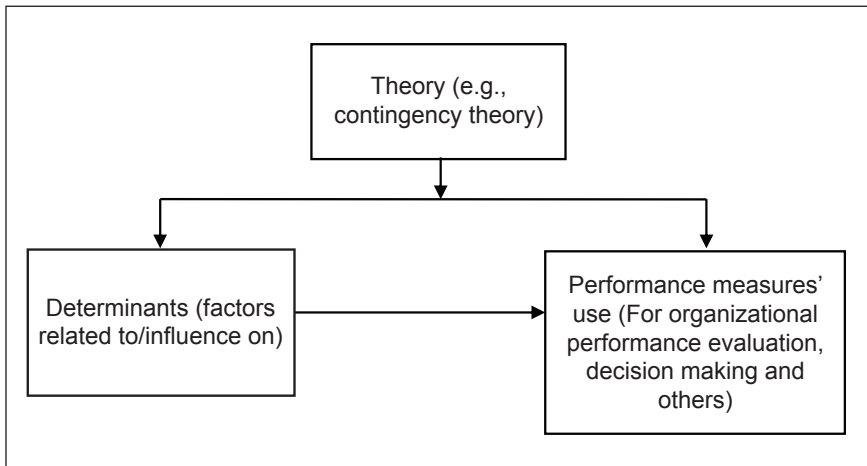


Figure 2: Conceptual Framework of the Study

## **FINDINGS**

We identify several papers that met our research objectives. Table A.1 (Appendix-A) classifies the studies and the determinants identified in those studies. In the following sections, we will briefly discuss the findings of the review paper.

### **Determinants of Performance Measures' Use**

#### **Organizational size**

Researchers have investigated the effect of organizational size on BSC usage, and suggest that large companies use BSC more than do small companies. For example, Speckbacher, Bischof and Pfeiffer (2003) found a significant association of organizational size and BSC usage. These findings complement those of Hoque and James (2000), in which 66 Australian manufacturing companies were surveyed and found that BSC usage is positively associated with organization size. From the findings of these two studies, large companies are presumed to be more likely to use innovative performance measurement techniques than small companies.

#### **Strategy**

In the 1980s, business strategy emerged as an important contextual variable that influences many business organizational systems. Researchers conceptualized strategy based on the strategic choices of business. Some choices include (i) market positioning: low cost versus product differentiation (Porter, 1980); strategic pattern: prospector versus defender (Abernethy & Guthrie, 1994; Hoque, 2004;); or (iii) strategic priorities: customization, quality, flexibility, and customer focus (Abernethy & Lillis, 1995; Chenhall & Langfield-Smith, 1998; Ittner, Larcker, & Randall, 2003).

Many empirical studies were conducted to elucidate the association of strategy with the use of different categories of performance measures. For example, Perera, Harrison and Poole (1997) attempted to know about the firms that pursue a customer-focused manufacturing strategy and their emphasis on the use of nonfinancial performance measures. Evidence of the study suggested that such firms place greater emphasis on nonfinancial performance measures. They chose manufacturing firms in Sydney, Australia as their experimental setting.



Lillis and van Veen-Dirks (2008) also found that the use of efficiency measures differ with the strategic emphasis on low cost. Dekker, Groot and Schoute (2013) carried out a similar study to explore the implication of mixed strategy on the variety and nature of performance measures used in evaluating managerial performance. Analyses of their results support that firms that pursue mixed strategies use more integrated performance measures as compared to firms pursuing archetypal strategies (low cost versus product differentiation). The findings assert that the use of different performance measures is associated with that of different strategies.

Van Veen-Dirks (2010) also studied the determinants on the importance of different uses of financial and nonfinancial performance measures (evaluation versus reward of managers). The result of this study found that an emphasis on differentiation using product performance strategy has a negative effect on the importance of financial performance measures for reward but has no influence on evaluation. However, the emphasis on nonfinancial measures increases for periodic evaluation and reward when the strategic emphasis increases for differentiation using delivery/flexibility.

Considering these studies that which are based on strategic pursuits of firms, Ho, Wu, and Wu (2014) examined how consensus on strategy implementation of operational-level managers and employees affects the efficacy of performance measures. Field-based archival and survey data from a Taiwanese financial services company is used in the study. Ho, Wu, and Wu (2014) revealed that “the incentive effect of using performance measures in performance evaluation and promotion decisions is greater for employees with a higher level of consensus on strategy implementation”. The findings of their study indicate that consensus on strategy implementation among employees within an organization would affect the effectiveness of performance measures.

Findings of these studies support that strategy has long been viewed as an important contextual factor for the use and implementation of any management accounting, control practices in organizations, and use of performance measures.

## **Organization Structure**

Organizational structure is regarded as a key contextual variable for a range of design, use, and implementation of management accounting systems. However, only the study of Lee and Yang (2011) examined the effect of organization structure on the use of performance measures. The results of their study demonstrate that organization structure is significantly associated with the use of multiple performance measures. They found that organic organizations use multiple performance measures more than do mechanistic organizations.

## **Market Competition**

Researchers found mixed result on the effects of market competition in the use of performance measures. The study of Hoque, Mia, and Alam (2001) revealed a positive and significant association between the intensity of market competition and use of multiple measures for performance evaluation. Abdel-Maksoud, Dugdale and Luther (2005) also found a strong association between the importance of six aspects of competition (quality, innovation, customer service, price, delivery, and flexibility) and the five nonfinancial measures of shop-floor performance (measures of efficiency and utilization, delivery performance, human resource, product quality, and customer satisfaction). However, Lee and Yang (2011) did not find any significant influence of market competition on the use of performance measures. The research findings are inconclusive, and hence, researchers must analyze this contextual factor more rigorously.

## **Product Life-Cycle Stage**

Only one study found an association between the product lifecycle stage and the use of performance measures. Hoque and James (2000) argued that at early lifecycle stages of products, financial outcomes are less certain and results of important decisions may be realized in the future. Therefore, nonfinancial measures, such as new product development and customer satisfaction, can be leading indicators of future financial performance. To verify this argument, Hoque and James (2000) surveyed 66 Australian manufacturing companies and found a positive relationship between early product life-cycle stage and the use of BSC. However, further investigation using each perspective of BSC separately revealed that firms that launched new products have a large tendency to rely on measures related to new products.

## **Industry Type**

Industry type may influence the importance and use of performance measures. However, researchers found mixed results on the association between industry type and the use of different performance measures. For example, Speckbacher, Bischof and Pfeiffer (2003) did not find any significant difference among industries who adopted BSC and those who did not. However, Abdel-Maksoud, Dugdale and Luther (2005) found a significant result on the existence and importance of shop floor nonfinancial performance measures across industry sectors.

## **Human Resource Factors**

In a dynamic and changing business environment, the reliance of firms on intangible resources is increasing to accomplish a competitive advantage. Using archival data from 177 firms, Widener (2006) found that labor-intensive firms emphasize on the use of financial and nonfinancial measures and this association is moderated by the pay structure of the firm. Only one study is found about the influence of human capital on the use of performance measures. Therefore, analysis of this contextual factor remains lacking.

## **Organizational Culture**

Henri (2006) affirms that “culture is an omnipresent factor which affects practically all aspects of organizational interactions”. Henri (2006) conducted a study to realize the association between organizational culture and use of multiple performance measures by top management teams. Organization culture is conceptualized by firms that have control or flexibility values. The result of this study asserts that top managers of firms that flexibility values tend to use more performance measures than do top managers of firms that have control values.

## **Nature/Type of Performance Measurement Systems (PMS) Use**

Henri (2006) also investigated the use of performance measures as another contextual factor that influences the diversity of measurement. He identified four types of performance measure uses, such as monitoring, attention-focusing, strategic decision-making, and legitimization. The findings of the study demonstrated that performance measures used for attention-focusing and strategic decision-making positively influenced the

diversity of measurement. In another study, van Veen-Dirks (2010) found the weight attached to performance measures for evaluation is different for reward of production managers. The importance given to a set of financial and nonfinancial measures is higher for the evaluation than for rewards of managers.

### **Departmental Interdependence**

Van Veen-Dirks (2010) also found that departmental interdependence decreases the importance of financial measures for rewards of production managers but not for evaluation. Departmental interdependence in financial measures has a positive effect for evaluation and has no effect for rewards.

### **Individual Manager Effects**

The use of performance measures at firm level may not be same as that at a managerial level. Wiersma (2009) conducted a study on the managers of 19 Dutch firms to examine the effect of manager's evaluation style and the receptiveness to new information on the use of BSC.

Wiersma (2009) classified evaluation style of managers as “(1) appropriateness of using financial versus nonfinancial measures; (2) appropriateness of using qualitative versus quantitative measures; and (3) rigidity or flexibility of the evaluation” (p.246). The result of the study showed that BSC used for coordination of activities in the workgroup and self-monitoring is negatively associated with rigidity as opposed to flexibility of the evaluation. The other two dimensions of evaluation style are not associated with BSC usage. However, the receptiveness of managers to new information is positively associated with BSC usage for decision-making, decision-rationalizing, and coordination.

From these results, the usage of BSC by the managers is comprehended as not only a rational choice but also a matter of individual managerial preferences.

### **Use of Other Control Alternatives**

Wiersma (2009) also investigated whether “alternative controls, such as action controls and personal or cultural controls, are complements to or substitutes for BSC usage”. The result of the study showed that BSC usage is related to the other control types exercised in the organizational unit. BSC

usage for decision-making and decision-rationalizing is higher when the organizational unit uses more action controls.

### **Employee Perceptions of Fairness**

Lau and Martin-Sardesai (2012) revealed an interesting finding on the perception of employees towards organizational fairness and choice of comprehensive performance measures. They found that organizational concern for workplace fairness significantly affects the choice of performance measures. Data were collected from Australia and the United Kingdom using questionnaire survey to test the hypotheses of the study.

### **Technology Related Factors**

Hoque, Mia and Alam (2001) found that the use of multiple measures of performance is positively and significantly associated with the applications of computer-aided manufacturing. However, Abdel-Maksoud, Dugdale and Luther (2005) found few significant correlations between advanced manufacturing technology (AMT) and the use of shop floor nonfinancial performance measures (SFNFPMs).

Moreover, Abdel-Maksoud, Dugdale and Luther (2005) found that stock handling technologies are correlated with delivery performance measures and customer satisfaction but not with efficiency, human resource, or quality measures. Computer-based production scheduling software is highly associated with emphasized several shop-floor measures.

Van Veen-Dirks (2010) also found that technological complexity negatively influences the significance of nonfinancial measures for rewards and has no significant influence on evaluation. However, technological complexity did not increase the importance of financial measures.

### **Others**

Abdel-Maksoud, Dugdale and Luther. (2005) demonstrated that innovative management practices, such as Total Quality Management and Just in Time are highly correlated with SFNFPMs. However, competitive management practices, such as strategic management accounting and customer profitability analysis, are not correlated with product quality and customer satisfaction measures. Moreover, the extent of upward communication is significantly correlated with all aspects of SFNFPMs.

The number of employees shows a negative correlation with measures of human resource, and ‘annual average shop-floor wages and salaries’ shows a significant correlation with efficiency and customer satisfaction measures.

Furthermore, Ittner, Larcker, and Rajan (1997) found that the use of nonfinancial performance measures increased with the level of regulation and noise in financial measures of CEO bonus contracts. Said, Hassab Elnaby and Wier (2003) also affirmed that operational and competitive characteristics of firms affected the use of nonfinancial measures.

## **DISCUSSION AND CONCLUSION**

This paper tries to present a synthesized understanding on the effect of contextual factors with the use of performance measures and to explore some future research avenues. This paper examines many internal and external factors related to the use of performance measures in private organizations. The findings of this review paper assert that traditional contextual factors, such as size, strategy, intensity of market competition, organizational structure, and culture, influence the use of performance measures in organizations. This paper also identifies some unusual factors that also influence use of performance measures, such as product lifecycle stage, nature or type of performance measures use, individual manager influence, reliance on human capital, and technological factors. .

Therefore, the findings of this paper have many implications. First, this paper synthesizes the findings of different research papers on same contextual variables and presents a common overview. The researcher will obtain condensed knowledge on the relationship between different contextual variables and use of performance measures in the future. Therefore, this paper will help the future researcher to formulate more refined hypothesis than before. Second, this review paper presents the contextual factors already identified by certain researcher. Therefore, future researchers could know which variables are overanalyzed and which further need rigorous analysis. Third, practitioners and managers will get a complete understanding on the diverse contextual variables that affect the use of performance measures. Therefore, they can take effective decisions before using and adopting performance measures.

This paper explored the following future research opportunities for future research avenues. First, organizational structure and culture are important contextual factors for design, use, and implementation of different performance measures. Only one study on these two variables was found. Moreover, studies are lacking on various important contextual factors, such as the influence of functionality of information systems, managerial or leadership style, and national culture on the use of performance measures. The association between many unusual contextual factors and the use of different performance measures are still overlooked.

Second, after analyzing the sample papers, we did not find any replicated study. Researchers are still trying to identify new contextual factors and are not very interested in replicated study. However, Dyckman and Zeff (2014) assert that “a positive replication would suggest that the result is well- grounded and can be relied upon or quoted. Furthermore, future efforts might perhaps be better directed toward making extensions or to addressing new topics. A failed replication, on the other hand, would warn the reader not to accept, quote, or use the results as basis for extension until the matter is clarified.”

Third, we did not find any cross-country comparative study. Cross-country or even cross-industry research in this study field remains lacking. Moreover, most of the studies in this field are conducted in Anglo-American countries (e.g., USA, UK, and Australia) as compared to Asian countries (see Table A.1 in Appendix- A). A comparative analysis between Asian and Anglo-American countries may reveal a dissimilar effect on the same variable.

Fourth, the nature or type of performance measure usage has some effects on its usage, thereby indicating that influence of various contextual factors on performance measures usage will be different based on its usage. Researchers in most of the reviewed papers did not clarify the purpose of performance measure usage. Only Henri (2006), Lee and Yang (2011), and Wiersma (2009) mentioned the types, purpose, or nature of performance measures' use and the effect of different contextual variables on the usage. Researchers need to explicitly clarify the purpose of performance measures' use before considering the effect of contextual factors on its use. The effect of some contextual factors may be different depending on the purposes of its use.

When examining the theories, we found that contingency theory (see Table A.1 in Appendix-A) is widely adopted by researchers to explain the research findings. Therefore, applying meta-theory in this field of study remains lacking. A meta-theory approach may help the researcher to identify certain contextual factors that are related to the external or regulatory environment of an organization.

However, this study also has several limitations. Although a rigorous method is followed, we still may have overlooked relevant studies that have been published in a journal not included in our selected journal list, studies that have been published in a journal of non- English language, and studies that have been referred in articles beyond our scope of study. Moreover, we used our own judgment when analyzing the influence of various contextual factors to interpret the variables and relationship of those variables with the use of performance measures. Our judgment may not match completely with that of the original authors of the study.

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## APPENDIX

**Table 1: Determinants of Performance Measures' Usage**

Performance Measures Contextual Factors	Financial Measures	Non-Financial Measures	Multiple Measures <sup>[1]</sup>	Strategic Performance Measures (BSC)
<b>1. Organizational Size</b>				1.Hoque and James, (2000); [T:Not explicit; ES: Australia (Manufacturing firms)] 1.Speckbacher, Bischof and Pfeiffer (2003) [T:Not explicit; ES: German Speaking Country]
<b>2. Strategy:</b> a. Customer focused strategy  b. Consensus on strategy implementation  c. Production strategy(focus on differentiation)		2a. Perera, Harrison and Poole (1997)  [T:Contingency;  ES: Australia (manufacturing firms)]  2b.Ho, Wu and Wu (2014)  [T: Person–organization fit;  ES :Taiwan (Financial services firm)]		
			2c.van Veen-Dirks (2010) [T:Not explicit; ES : Netherlands (Industrial firms)]	

<b>Performance Measures</b> <b>Contextual Factors</b>	<b>Financial Measures</b>	<b>Non-Financial Measures</b>	<b>Multiple Measures <sup>[1]</sup></b>	<b>Strategic Performance Measures (BSC)</b>
<p>d. Joint strategy (focus on low cost and differentiation both)</p> <p>e. Strategic Priorities (market/customer orientation, innovation and personnel development)</p> <p>f. Innovation and Quality oriented strategy</p> <p>g. Quality based manufacturing strategy</p>		<p>2e. Verbeeten and Boons (2009) [T: Not explicit; ES : Netharlands]</p> <p>2f. Ittner, Larcker and Rajan (1997) [T: Agency; ES: USA]</p>	<p>2d. Dekker, Groot and Schoute (2013); [T: Not explicit; ES : Netherlands (various industries)]</p> <p>2d. Lillis and van Veen-Dirks (2008) [T: Not explicit; ES : Netherlands (Industrial firms)]</p> <p>2g. Van der Stede, Chow and Lin (2006) [T: Contingency and agency; ES: USA and Europe (Manufacturing firms)]</p>	
<p>3. Organizational Structure</p>			<p>3. Lee &amp; Yang (2011) [T: Contingency; ES : Taiwan]</p>	



Performance Measures Contextual Factors	Financial Measures	Non-Financial Measures	Multiple Measures <sup>[1]</sup>	Strategic Performance Measures (BSC)
<b>4. Market Competition:</b> a. Intensity  b. Type		4a. Abdel-Maksoud, Dugdale and Luther (2005) [T: Contingency; ES : UK (Manufacturing firms)]  4b. Chen, Matsumura, Shin, and Wu (2015) [T: Not explicit; ES :USA]	4a. Hoque, Mia and Alam(2001); [T:Contingency; ES: Newzealand (Manufacturing firms)] 4a.Lee & Yang (2011)	
<b>5. Product Life-Cycle Stage</b>				5.Hoque and James (2000)
<b>6. Industry Type</b>		6.Abel-Maksoud, Dugdale and Luther (2005)		6.Speckbacher, Bischof and Pfeiffer (2003)
<b>7. Human Resource Factors:</b> a. Reliance on human capital b. Firm's pay structure		7a.b.Widener (2006) [T: Agency and social psychology theory; ES : Not explicit (Manufacturing and service firms)]		
<b>8. Organizational Culture</b>			8.Henri(2006) [T: Contingency; ES : Canadian (Manufacturing firms)]	

Performance Measures Contextual Factors	Financial Measures	Non-Financial Measures	Multiple Measures <sup>[1]</sup>	Strategic Performance Measures (BSC)
<b>9. Individual Manager Effects:</b> a. Evaluation style of manager's b. Manager's receptiveness to new information				9a.b.Wiersma, (2009) [T:Not Explicit; ES : Netherland (Manufacturing and service firms)]
<b>10. Organizational Support Systems</b> (Use of other control alternatives such as, budgets, action controls and personal and cultural controls.)				10.Wiersma (2009)
<b>11. Nature/Type of Performance Measures Systems (PMS) Use</b>			11.Henri (2006); 11.van Veen-Dirks (2010)	
<b>12. Departmental Interdependence</b>			12.van Veen-Dirks (2010)	
<b>13. Technology Related Factors:</b> a. Technological complexity b. Advanced Manufacturing Technologies (computer aided manufacturing, computer aided design etc.) c. Stock handling technologies d. Production scheduling software		13b. Abdel-Maksoud, Dugdale and Luther (2005)  13c. Abdel-Maksoud, Dugdale and Luther (2005) 13d. Abdel-Maksoud, Dugdale and Luther (2005)	13a. van Veen-Dirks (2010) 13b. Hoque, Mia and Alam(2001)	

<b>Performance Measures</b> <b>Contextual Factors</b>	<b>Financial Measures</b>	<b>Non-Financial Measures</b>	<b>Multiple Measures <sup>[1]</sup></b>	<b>Strategic Performance Measures (BSC)</b>
<b>14. Employee's Perception</b> <b>Organizational Fairness</b>			14. Lau & Martin-Sardesai, (2012) [T: Organizational behavior; ES : Australia and UK]	
<b>15. Management Practices (Innovative &amp; Competitive)</b>		15. Abdel-Maksoud, Dugdale and Luther (2005)		
<b>16. Adoption of Contemporary Ideas</b>		16. Abdel-Maksoud, Dugdale and Luther (2005)		
<b>17. Upward Communication</b>		17. Abdel-Maksoud, Dugdale and Luther (2005)		
<b>18. Workforce Characteristics</b>		18. Abdel-Maksoud, Dugdale and Luther (2005)		
<b>19. Level of Regulation</b>		19. Ittner, Larcker & Rajan (1997)		
<b>20. Noise in Financial Measures</b>		20. Ittner, Larcker & Rajan (1997)		

<b>Performance Measures</b> <b>Contextual Factors</b>	<b>Financial Measures</b>	<b>Non-Financial Measures</b>	<b>Multiple Measures <sup>[1]</sup></b>	<b>Strategic Performance Measures (BSC)</b>
21. Firm's Characteristics		21.Said, Hassab Elnaby and Wier (2003) [T: Contingency theory and agency theory; ES : USA (Manufacturing and service firms)]		

*Notes:*

- [1] Multiple performance measures are synonymously used for integrated performance measures, comprehensive performance measures and diversity of measurement in this paper.
- [2] The abbreviation: T refers to Theory and ES refers to Experimental Setting.